
New Species of *Sphaeradenia* (Cyclanthaceae) from Costa Rica and Ecuador

Roger Eriksson

Department of Plant and Environmental Sciences, Göteborg University, Box 461, SE 405 30 Göteborg, Sweden. roger.eriksson@dpes.gu.se

ABSTRACT. Two new species of *Sphaeradenia* Harling (Cyclanthaceae), *S. rostellata* R. Eriksson from Costa Rica and *S. marcescens* R. Eriksson from Ecuador, are described and illustrated. *Sphaeradenia rostellata* is distinguished from the closely related *S. praetermissa* R. Eriksson and *S. occidentalis* R. Eriksson by the widely separated, uncinata stigmas. *Sphaeradenia marcescens* differs from the supposedly closely related *S. pallida* R. Eriksson by the persisting staminate flowers.

RESUMEN. Se describen e ilustran dos especies nuevas de *Sphaeradenia* Harling (Cyclanthaceae), *S. rostellata* R. Eriksson de Costa Rica y *S. marcescens* R. Eriksson de Ecuador. *Sphaeradenia rostellata* se distingue de las especies estrechamente relacionadas, *S. praetermissa* R. Eriksson y *S. occidentalis* R. Eriksson, por los estigmas muy separados y uncinados. *Sphaeradenia marcescens* se diferencia de la especie probablemente más relacionada, *S. pallida* R. Eriksson, por las flores estaminadas persistentes.

Key words: Costa Rica, Cyclanthaceae, Ecuador, *Sphaeradenia*.

The genus *Sphaeradenia* Harling (Cyclanthaceae) is characterized by, e.g., distichous leaves, pistillate flowers with one apical placenta, and anthers often having an apical secretion globule. Furthermore, the fruiting spadices are often brightly colored, in contrast to many other cyclanths. It is distributed from southern Nicaragua to northern Bolivia, extending eastward into Venezuela and adjacent Brazil, and is commonly found in humid habitats from sea level up to ca. 3000 m altitude, or in some areas even higher. *Sphaeradenia* was recently revised (Eriksson, 1995), with 50 recognized species of which 20 were described then as new. There are obviously new *Sphaeradenia* species to be discovered, and two of them are described here.

Measurements were taken on dried material according to Eriksson (1995: fig. 1), except that median and lateral floral structures were not separately measured. Floral and fruiting structures, and to some extent vegetative parts, may shrink considerably during drying.

Sphaeradenia rostellata R. Eriksson, sp. nov.

TYPE: Costa Rica, Limón: Cantón de Talamanca, Cordillera de Talamanca, Cerro El Codo, betw. Ujarrás & San José Cabécar, 9°21'23"N, 83°13'40"W, 1500 m, 19 Mar. 1993, A. Fernández 741 (holotype, INB; isotype, CR not seen). Figure 1A–C.

Planta epiphytica vel terrestris. Laminae 76–81 cm longae, segmentis 10–11 cm latis, lanceolatis, costa 24–28 cm longa; petiolus 40 ad plus quam 85 cm longus; vagina 33–51 cm longa. Spadix cylindrica vel anguste ellipsoidea, in statu fructifero rubra, in statu florifero circiter 1.5 cm diametro, in statu fructifero juveni 4.5 cm longa, 1.8 cm diametro, in statu fructifero maturo 6.3 cm longa, 2.4 cm diametro. Flores masculi caduci, 3.7–4 mm longi; antherae 0.6–0.8 mm longae, 0.5 mm latae, globis secretionis usque ad 0.05 mm diametro. Flores feminei et fructus 2.8–7 mm longi, 2.7–4.1 mm lati; tepala libera; stylus 2.5–7 mm longus; stigmata 1.9–2.8 mm longa, 0.4–0.5 mm lata, inter apices distales 3.8–6.6 mm, stigmata desuper visa linearia, uncinata, apice stricto vel deorsum curvo, a latere compressa et aliformia, in statu fructifero late separata, nonnihil inferiora ad altiora quam tepala. Semina oblonga vel anguste ellipsoidea.

Epiphyte or terrestrial plant. Leaf blades 76–81 cm, bifid 68%–65% of their length, segments 10–11 cm broad, lanceolate, acuminate, ridge distance 12–15 mm, abaxial ridges with low papillae (sometimes almost smooth), midrib 24–28 cm; petiole 40 to more than 85 cm; sheath 33–51 cm. Peduncle 21–31 cm, straight; spathes 3, white tinged with red, longest one 11 cm. Spadix cylindrical to narrowly ellipsoid, in fruit red, at anthesis ca. 1.5 cm broad, in young fruit 4.5 × 1.8 cm, in mature fruit 6.3 × 2.4 cm. Staminate flowers caducous, 3.7–4 mm, pedicel 2.9–3.1 mm, receptacle 2.1–2.2 mm broad, ± flat; perianth lobes 11 to 12, including 5 to 6 adaxial ones, up to 1.1 × 0.6 mm; stamens 13 to 22, anthers 0.6–0.8 × 0.5 mm, secretion globules pale, to 0.05 mm diam., filaments 0.2–0.3 mm, basal bulbs 0.3 × 0.3 mm, ± globose. Pistillate flowers and fruits 2.8–7 × 2.7–4.1 mm; tepals 2.8–5.8 mm, 1.5–3 mm broad, 0.8–1 mm thick, free, oblong to narrowly triangular, ± acute, apex ± straight, upper part of tepals incurved at anthesis, bent outward in fruit, margins straight to incurved; style 2.5–7 × 1–

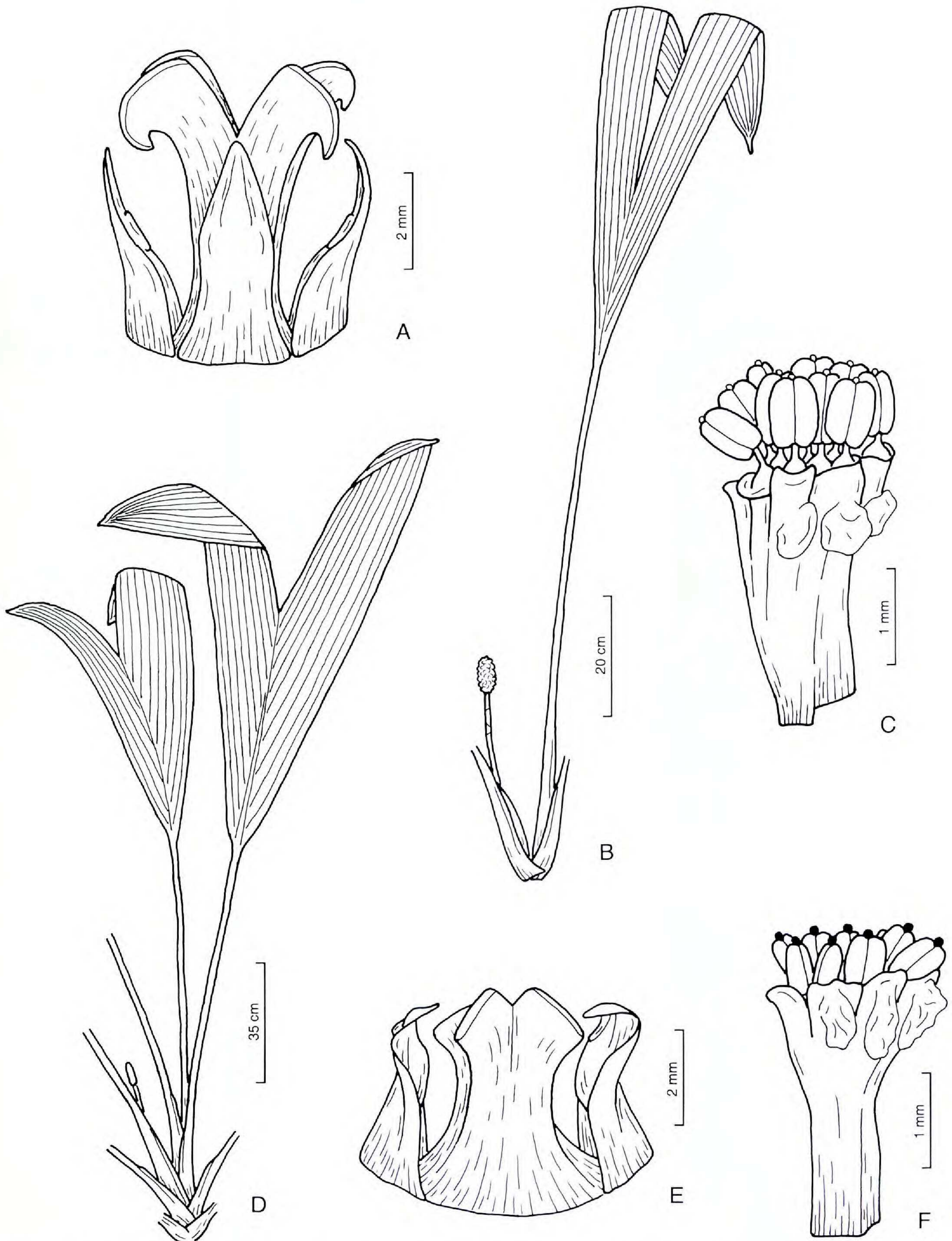


Figure 1. A–C. *Sphaeradenia rostellata* R. Eriksson. —A. Fruit (Fernández 741, holotype). —B. Habit (Fernández 741, holotype). —C. Staminate flower (Fernández 970). D–F. *S. marcescens* R. Eriksson. —D. Habit (Cornejo et al. 5183). —E. Fruit, one tepal removed (Cornejo & Bonifaz 5107, holotype). —F. Staminate flower (Cornejo et al. 5183). A–C and E–F drawn from herbarium material, D drawn from photo of live individual.

2.5 mm, columnar, in upper part developed as stigmatic arms; stigmas $1.9\text{--}2.8 \times 0.4\text{--}0.5$ mm, width between distal apices $3.8\text{--}6.6$ mm, stigmas free, linear seen from above, distinctly uncinuate, apex straight at anthesis, bent downward in fruit, style and sterile part of stigmas developed as laterally compressed stigmatic arms, stigmas \pm widely separated in fruit, somewhat lower than the tepals to slightly surpassing them. Seeds 1.3×0.5 mm (probably immature), oblong to narrowly ellipsoid.

Distribution. This new species is known from a small area on the Atlantic slopes of the Cordillera de Talamanca in eastern Costa Rica (Fig. 2), where it has been collected in montane rainforest and cloud forest at 1500–2250 m altitude.

Discussion. *Sphaeradenia rostellata* is closely related to the Costa Rican species *S. praetermissa* R. Eriksson and *S. occidentalis* R. Eriksson but is easily distinguished from them by its distinctly uncinuate, linear stigmas that are widely separated by stigmatic arms. The specific epithet alludes to this characteristic feature.

The paratype specimen *Ocampo 3510* was available and suspected to belong to a new species already when preparing the revision of *Sphaeradenia* (Eriksson, 1995), but it was badly preserved and instead cited as uncertain. Since then, additional collections have confirmed the suspicion and provided sufficient material for describing this species as new. This species was treated as *Sphaeradenia* sp. A by Hammel (2003).

Paratypes. COSTA RICA. **Limón:** Cordillera de Talamanca, Quebrada Kuisa, *J. Bittner 1788* (CR not seen, GB, INB not seen, MO not seen); Cordillera de Talamanca, Cerro Carguicacha, betw. Ujarrás & San José Cabécar, *A. Fernández 970* (CR not seen, INB); Cordillera de Talamanca, betw. Río Lori & Río Coén, *R. Ocampo 3510* (CR).

Sphaeradenia marcescens R. Eriksson, sp. nov.

TYPE: Ecuador. Guayas: Reserva Ecol. Manglares Churute, Cerro Pancho Diablo, $2^{\circ}25'S$, $79^{\circ}39'W$, 500 m, 3 May 1996, *X. Cornejo & C. Bonifaz 5107* (holotype, GB). Figure 1D–F.

Planta terrestris vel epiphytica. Laminae 95–114 cm longae, segmentis 12–19 cm latis, lanceolatis, costa 36–50 cm longa; petiolus plus quam 50 cm longus; vagina plus quam 35 cm longa. Spadix cylindrica, in statu fructifero rubella, in statu florifero 4.1 cm longa, 1.3 cm diametro, in statu fructifero maturo 6.8 cm longa, 1.6 cm diametro. Flores masculi persistentes, 4–4.1 mm longi; antherae 0.6–0.7 mm longae, 0.4–0.5 mm latae, globis secretionis usque ad 0.1 mm diametro. Flores feminei et fructus 2.7–4.5 mm longi, 2.7–7.4 mm lati; tepala libera; stylus 2.3–4.5 mm longus; stigmata 1.5–2.1 mm longa, 0.4–0.6 mm lata, inter

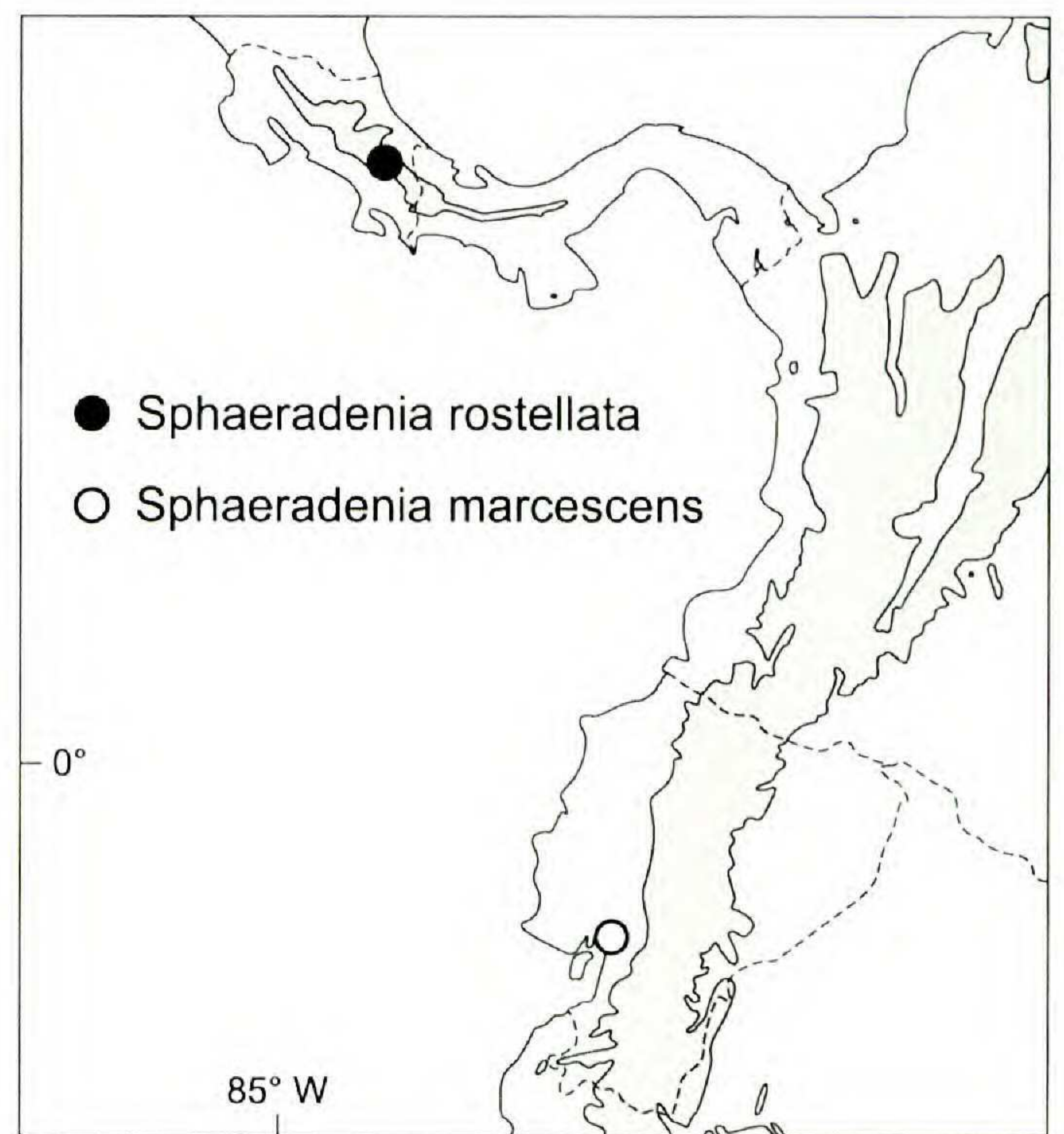


Figure 2. Distribution of *Sphaeradenia rostellata* R. Eriksson and *S. marcescens* R. Eriksson.

apices distales 3–4.2 mm, stigmata desuper visa linearia (vel anguste lanceolata), \pm aliformia, pariter alta vel altiora quam tepala. Semina ellipsoidea.

Terrestrial plant or epiphyte, probably short-stemmed. Leaf blades 95–114 cm, bifid 62%–57% of their length, segments 12–19 cm broad, \pm lanceolate, acuminate, ridge distance 17–21 mm, abaxial ridges smooth or with low papillae, midrib 36–50 cm; petiole more than 50 cm; sheath more than 35 cm. Peduncle 23–35 cm, straight; spathes 3, white tinged with pink, longest one 4.7–12 cm. Spadix cylindrical, in fruit reddish, at anthesis 4.1×1.3 cm, in mature fruit 6.8×1.6 cm. Staminate flowers persisting as wilted in fruit, 4–4.1 mm, pedicel 3.1–3.2 mm, receptacle 2.1–2.3 mm broad, flat to shallowly concave; perianth lobes 10 to 12, including 4 to 6 adaxial ones, up to 1×0.8 mm; stamens 18 to 28, anthers $0.6\text{--}0.7 \times 0.4\text{--}0.5$ mm, secretion globules to 0.1 mm diam., filaments to 0.2 mm, basal bulbs $0.2\text{--}0.3 \times 0.2\text{--}0.3$ mm, globose to slightly elongate. Pistillate flowers and fruits $2.7\text{--}4.5 \times 2.7\text{--}7.4$ mm; tepals 2.7–3.7 mm, 1.6–5.2 mm broad, 0.7–1.2 mm thick, free, spatulate or oblong to \pm triangular, with elongate staminodial protuberance in fruit, \pm acute, apex incurved, with small or without apical glandule, upper margins \pm excurved, lower margins straight to incurved; staminodes ca. 5 cm, white; style 2.3–4.5 \times 1–6.3 mm, columnar, in upper(most) part developed as short stigmatic arms; stigmas $1.5\text{--}2.1 \times 0.4\text{--}0.6$ mm, width between distal apices 3–4.2 mm, stigmas free, linear (to narrowly lanceolate) seen from above, acute, not uncinuate to slightly so,

equaling tepals in height to slightly surpassing them. Seeds to 2.6×1.2 mm, ellipsoid.

Distribution. This new species is known only from the type locality at 500–700 m altitude in southwestern Ecuador, a humid, premontane forest (Fig. 2).

Discussion. *Sphaeradenia marcescens* is recognized by its reddish infructescences with persisting staminate flowers, the latter feature being rather uncommon in *Sphaeradenia*. The specific epithet refers to these staminate flowers. It seems to be closely related to *S. pallida* R. Eriksson from Colombia, as judged from the fruit morphology and stout habit, a species that is also found at rather low altitudes on the western slopes of the Andes.

Paratype. ECUADOR. **Guayas:** Reserva Ecol. Churute, Cerro Pancho Diablo, X. Cornejo, C. Cornejo & C. Bonifaz 5183 (GB).

Acknowledgments. I thank Barry Hammel and Xavier Cornejo for making the specimens of these new species available to me. Thanks also to Claes Persson, Barry Hammel, and an anonymous reviewer for comments on the manuscript.

Literature Cited

- Eriksson, R. 1995. The genus *Sphaeradenia* (Cyclanthaceae). *Opera Bot.* 126: 1–106.
- Hammel, B. E. 2003. Cyclanthaceae. Pp. 424–455 in B. E. Hammel, M. H. Grayum, C. Herrera & N. Zamora (editors), *Manual de Plantas de Costa Rica, Vol. II. Gimnospermas y Monocotiledóneas (Agavaceae–Musaceae)*. *Monogr. Syst. Bot. Missouri Bot. Gard.* 92.